No Education, No Good Jobs?

Evidence on the relationship between Education

and Labor Market Segmentation

Abstract. This paper assesses labor market segmentation across formal and informal salaried jobs and self-employment in three Latin American and three transition countries. It looks separately at the markets for skilled and unskilled labor, inquiring if segmentation is an exclusive feature of the latter. Longitudinal data are used to assess wage differentials and mobility patterns across jobs. To study mobility, the paper compares observed transitions with a new benchmark measure of mobility under the assumption of no segmentation. It finds evidence of a formal wage premium relative to informal salaried jobs in the three Latin American countries, but not in transition economies. It also finds evidence of extensive mobility across these two types of jobs in all countries, particularly from informal salaried to formal jobs. These patterns are suggestive of a preference for formal over informal salaried jobs in all countries. In contrast, there is little mobility between self-employment and formal salaried jobs, suggesting the existence of barriers to this type of mobility or a strong assortative matching according to workers' individual preferences. Lastly, for both wage differentials and mobility, there is no statistical difference across skill levels, indicating that the markets for skilled and unskilled labor are similarly affected by segmentation.

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1. Introduction

It is often assumed that education is a passport to good jobs. While better-educated workers tend to be more productive and able to perform functionally more sophisticated jobs than less skilled workers, education may not provide access to the preferred jobs if the labor market is segmented. Dualism and segmentation are often assumed to be basic features of labor markets in developing countries. However, the existence, magnitude and origin of such segmentation are far from being established. In this paper, we assess labor market segmentation across formal and informal salaried jobs and self-employment, for three Latin American and three Eastern and Central European countries. We look separately at the markets for skilled and unskilled labor, inquiring if labor segmentation is an exclusive feature of the latter.

The distinction across skill levels is relevant for various reasons. When barriers to entry into formal unskilled jobs are important, improving mobility between formal and informal jobs can bring welfare gains for the poorest workers. Instead, when the unskilled labor market is not segmented, easing access to education and skills may be the best route to raising workers' living standards. Yet, those investments in human capital may not pay much if the labor market for skilled workers is segmented.

The distinction across workers of different skill levels may also shed light on the drivers of segmentation. Theoretical models explain labor market segmentation as a result of labor market policies, labor market institutions or the payment of efficiency wages in the formal sector (Fields, 2005). Yet, policies and institutions impact the unskilled and skilled labor markets differently. For instance, if segmentation is caused by minimum wages, then duality is a feature that should only appear in unskilled labor markets. Assessing whether there are significant differences in segmentation among skilled and unskilled workers can yield important clues not only about whether labor markets behave differently across skill groups, but also about the possible sources, if any, of labor market segmentation.

Magnac (1991) defines labor market segmentation as the situation in which rewards in different sectors may vary for workers of equal productivity and the entry of workers in the formal sector is rationed. A number of studies have assessed wage differentials and labor mobility in developing countries. Recent work has questioned the traditional view of informal work as the disadvantaged sector and posits that workers may in fact choose the sector of employment based on their comparative advantage, their preferences, or to avoid costly taxes

and regulations (Magnac 1991; Yamada 1996; Maloney 1999; Saavedra and Chong 1999; Albrech and Navarro 2006; Perry et al. 2007). Many of these studies have brought new empirical evidence, which conflicts with traditional segmentation theories. Magnac (1991) for Colombia, Yamada (1996) for Peru, Maloney (1999) for Mexico find little evidence that formal salaried workers have higher earnings than self-employed workers. Earle and Sakova (2000) also find positive earning differentials for self-employed workers in five out of the six transition countries they study.[1] Moreover, Yamada and also Earle and Sakova find positive selection into self-employment, suggesting that these workers have a comparative advantage at being micro entrepreneurs. There are very few studies that look at the skill dimension of wage differentials. Gong and van Soest (2004) find a positive formal wage premium in Mexico that increases with the skill level.

Evidence based on wage differentials has also been questioned on the grounds that wage differentials do not reflect utility differences associated with variations in flexibility, independence or other attributes that may make informal sector jobs more desirable despite offering lower pay (Heckman and Hotz, 1986; Maloney, 1999). Moreover, estimates of wage differentials based on selection-corrected two-stage estimates can provide questionable estimates if the first stage selection model fits the data poorly. To overcome these issues, a number of recent papers look at mobility across different states as an alternative way to assess segmentation. The majority of these papers refer to Latin American countries (Maloney 1999; IADB, 2004; Duryea et al. 2006; Packard 2007; Bosch and Maloney 2007a, 2007b; Bosch et al. 2007; Bingsten et al. 2007). Most of these studies find high levels of mobility across labor market statuses. There also a number of studies assessing mobility in transition economies principally across public and private jobs, although in some cases self-employment is also considered. The studies find low rates of mobility in transition economies relative to OECD countries (Boeri and Flinn, 1999) although some countries, such as the Czech Republic (Sorm and Terrell, 2000) or Estonia (Haltiwanger and Vodopivec, 1999) experienced higher levels of mobility and more efficient reallocation of labor during the transition to a market economy

[1] Their sample of countries is: Bulgaria, Czech Republic, Hungary, Poland, Russia and Slovakia. They find positive differentials in all countries but Poland.

Regarding differences across skill level –the main focus of this paper-- Bosch and Maloney (2007b) find lower overall labor market mobility for skilled relative to unskilled labor in Argentina, Brazil and Mexico.

While studying labor mobility provides valuable insights, particularly when assessing the direction of labor market flows across the business cycle (Bosch and Maloney, 2007a, and Bosch et al. 2007), looking at mobility requires some measure of what mobility would look like in the absence of labor market segmentation. A world in which jobs are constantly created and destroyed due to idiosyncratic or industry-specific shocks requires large worker reallocation (Davis and Haltiwanger 1996 and Davis, Haltiwanger and Schuh, 1999). A number of studies have documented large levels of job reallocation in developing and transition economies (IADB 2004; Bartelsman et al. 2004). This implies that workers do not get matched once and for all in a formal or informal job, but rather that every few years they may be searching for new jobs. In this context, a labor market may be characterized by differences in rewards for workers of identical productivity, and still display certain mobility between formal and informal jobs.

Our work adds to the literature in several respects. First, we analyze segmentation assessing wage differentials and mobility across labor market states using consistent methods in six countries, two of which (Albania and Georgia) are understudied relative to other transition economies.[2] [3] Second, when analyzing wage differentials, we rely on longitudinal data, which allow separating the premium associated with certain jobs from the return to individual unobservable characteristics. Third, we develop a benchmark mobility indicator, which measures the degree of mobility that would occur in a world in which all states are equally preferred –in utility terms—and there is no state dependence, conditional on having left an initial position in the labor market—that is, all workers who left their initial position have equal probability of ending up in a given labor market state, regardless of their previous employment history. This allows assessing whether the observed mobility is high or low, the latter case flagging possible barriers to movement and segmentation. We adopt a broad geographical scope, comparing

[2] The coexistence of wage differentials and mobility barriers fits the traditional definition of segmentation. The lack of both defines cases of no segmentation. In addition, there are two more possibilities, which cannot be identified by looking only at either wage differentials or mobility. In one, which we refer to as wage segmentation, wage differentials are associated with high mobility (although not sufficient to level earnings across labor market states). In another, which we refer to mobility segmentation, lack of measured wage differentials coexists with low mobility across labor market states.

[3] Some exceptions are Yemtsov (2001) and Bernabe and Stampini (2006) for Georgia.

segmentation in Latin American labor markets with that of less studied Eastern European countries transiting to a market economy.

In our results, we find evidence of a positive formal wage premium relative to informal salaried jobs in the three Latin American countries, but not in the three transition economies. We also find high mobility from informal to formal salaried jobs in all countries, even when compared to a benchmark of no segmentation. These patterns are suggestive of a preference for formal jobs. Interestingly, while there are no clear patterns in terms of wage differentials across formal salaried and self-employment jobs–in many cases the premium is not significant, in others it favors self-employment and in others formal salaried jobs—in all cases, we find evidence of very low mobility between self-employment and formal sector jobs. This suggests the presence of large barriers to movement in both directions or strong assortative matching according to individual preferences. Finally, we find no statistical difference across skill levels in terms of wage differences or mobility, suggesting that the markets for skilled and unskilled labor are similarly affected by segmentation.

The rest of the paper is organized as follows. Section 2 describes the various datasets. Section 3 outlines the methodology used in this paper. Section 4 presents the main results for wage differentials estimated from static and dynamic wage models. Section 5 describes labor mobility, comparing observed transitions against those resulting from a counterfactual benchmark of no-segmentation. Finally, Section 6 concludes.

2. Data

We use panel data from three Eastern European and Central Asian (Albania, Georgia and Ukraine) and three Latin American countries (Argentina, Mexico and Venezuela) to assess the degree of labor market segmentation and mobility for skilled and unskilled workers. Table 1 lists the data sources as well as the time span covered by our data, while Table 2 lists some basic macroeconomic indicators for the period of study. In Argentina and Mexico, data are collected only in urban areas. In the rest of the countries, the data has national coverage.[4] To ensure comparability, we focus on non-farming individuals. All our results are conditional on not engaging in agricultural self-employment at any time.

[4] Argentina, however, is heavily urbanized.

We distinguish five different states in the labor market: out of labor force, unemployment, formal employment, informal employment, and self-employment. Individuals not belonging to any of these categories (for example employers or cooperative members) are excluded, as the number of observations is not sufficient to perform a sensible dynamic analysis. The definitions are as consistent as possible across countries. Individuals are out of the labor force when they do not work during the week of reference and are not actively searching a job. Unemployed are those who do not work in the week of reference, are available for work and are actively searching. Employees are considered formal when they are entitled to social security benefits (Albania, Argentina, Mexico and Venezuela), have a written contract (Georgia), or work for registered or official firms (Ukraine), and are informal when they are salaried but the former conditions do not apply. Self-employed are businessmen without employees or persons engaged in professional activities; unpaid family workers in such activities are also included in this category. Notice that by specifically separating the self-employed from the informal salaried we are allowing different segments of the labor market, which are often bunched together as part of the informal sector, to have different patterns of mobility and duality.

We define skill according to the highest educational degree achieved. Skilled workers are those with at least secondary education completed. An exception is made for Georgia, where about 85 percent of individuals have completed secondary school. In this case, the skilled category is restricted to individuals with a university degree (accounting for 37% of the sample). In some instances we also refer to professional activities. These include "legislators, senior officials and managers," "physical, mathematical, engineering science," "life science, health," "teaching" and other professionals, "technicians and associate professionals".[5]

Given these definitions, we next present evidence on the share of individuals with high education (Table 3) and the share of people in professional activities (Table 4) in each labor market state. As incidence of high education and professional jobs may not be comparable across countries, the figures are normalized to the national average. Values above one indicate that highly educated people or professionals are over-represented in a particular country.

There are substantial differences in the share of people who have a high school degree or more across countries. Mexico and Venezuela rank last, with 33-34 percent, followed by Argentina and Albania, around 40 percent. At the other extreme are the ex-Soviet republics of

[5] That is, all jobs coded between 1000 and 3900 in the International Standard Classification (ISCO).

Georgia and Ukraine. As predicted by models in which skilled workers are more productive in formal relative to informal salaried or self-employment activities, the proportion of skilled workers in salaried formal jobs is far higher than in the wage informal sector, or among the self-employed (the only exceptions are Albania and Ukraine, where highly educated individuals are over-represented among the self-employed). The proportion of highly skilled workers in salaried formal jobs is also much higher than for the unemployed. The figures suggest a strong positive selection in employment, as the incidence of high education is particularly low among individuals out of the labor force.

The result for the share of workers in professional activities is similar to that for education. Within each country, professionals are concentrated in formal salaried jobs (Table 4) with the exception of Ukraine, where the share of professionals is the highest among the few self-employed.

It is worth comparing the values in the two tables in order to identify potential mismatches between human capital content and job quality. For example, in Albania and Ukraine highly educated individuals are almost evenly represented in informal salaried jobs, but in that category the proportion of professional jobs is very low. On the contrary, in Latin American countries the share of professional jobs for informal employees is much higher, particularly in Mexico.

3. Methodology

We assess the evidence for labor market segmentation in two alternative ways. First, we estimate changes in earnings associated with labor market transitions, making use of the panel dimension of the data. Second, we analyze labor mobility assessing the magnitude of transitions across labor market states, and comparing those transitions against a counterfactual measure of mobility under no segmentation. Together, the patterns of wage differentials and mobility provide interesting insights into the degree and nature of labor market dualism.

3.1. Effect of Transitions on Wages

A large majority of studies assessing labor market segmentation focus on estimating wage differentials using cross sectional income data for a large number of workers. Such estimates have been questioned on the grounds that it is difficult to distinguish the effect of job

characteristics from the effect of individual unobservable characteristics such as ability, which are correlated to the choice of jobs. In this paper, we compare estimates resulting from static models with those resulting from estimating earning changes for workers who switch jobs using panel data. Assuming no further dynamic selection issues, constant unobserved individual characteristics are differenced away and the panel estimates capture the pure "state effect" that arises from changing jobs.

Cross sectional estimates of wage differentials across labor market states are obtained by estimating the following models (one for each state j):

$$\ln\left(wh_{ij}\right) = X_{ij}^{'}\beta_j + \delta_j\lambda_{ij} + u_{ij} \qquad (1)$$

where wh_{ij} is the real hourly wage earned by worker i in state j, X is a vector of individual characteristics, including gender, age, education, and time dummies. In addition to gender, age and education are also defined as dichotomic variables, where *age* takes a value of zero if the individual's age is between 15 and 40, and one if between 41 and 65. *Education* takes a value of 1 if the individual has completed secondary education or above and zero otherwise. In addition, λ is an Inverse-Mills-Ratio-like term, which corrects for selection bias[6]. A multinomial logit regression is estimated as a first step, in order to predict λ. The variables included in the selection model are the ones in X, plus a set of variables assumed to be correlated with the selection decision but not with workers' earnings, namely the size of the household, the share of the household that are below age 15 (children), and a dummy for being household head.

The underlying assumption in this model is that differences in predicted wages across states provide a measure of earnings changes associated with job-to-job transitions. However, as stated above, this is not necessarily the case if unobservables correlated with being in a certain state are not properly accounted for in the selection model. To assess whether unaccounted selection is biasing the estimates, we also estimate an alternative dynamic model that makes use of the panel dimension of the data. The model is as follows:

[6] The inclusion of a term predicted in a first stage selection regression makes the standard errors of the coefficients estimated from model (1) incorrect. Nonetheless, the coefficients are consistent, and we rely on these coefficients to predict mean earnings of a worker of average characteristics employed in each labor market state.

$$\ln(wh_{i(t)}) - \ln(wh_{i(t-1)}) =$$
$$\alpha + \sum_j \sum_k \beta_{jk} \left(S_{ik(t)} * S_{ij(t-1)} \right) + \delta X_{i(t)} + \sum_j \sum_k \gamma_{jk} \left(\left(S_{ik(t)} * S_{ij(t-1)} \right) * X_{i(t)} \right) + \sum_z \varphi_z T_{(t)} + \varepsilon_{i(t)} \quad (2)$$

where the left hand side is the percentage change in earning of individual *i* between year t-1 and t; $S_{j(t-1)}*S_{k(t)}$ is a vector of dummy variables for each possible transition from any state j in *t-1* to any state k in time t*; X* is a vector of individual dichotomic variables, namely gender, age and education defined as in the static model; $S_{j(t-1)}*S_{k(t)}*X$ is a vector of interactions between individual characteristics and labor market transitions; *T* is a vector of time fixed effects and ε is an error term with average equal to zero and constant variance.

This model allows predicting the mean change in hourly wages associated with a change in employment separately for skilled and unskilled individuals. This measure, however, does not take into account the extent to which earnings might have grown (or declined) if a worker had not switched jobs. Thus, to assess the effect of the transition relative to workers who did not switch, we compute a difference-in-difference estimate based on the following expression:

$$\Delta\Delta^s_{jk} = \Delta^s{}_{jk} - \Delta^s_{jj} \quad (3)$$

where $\Delta^s{}_{jk}$ is the predicted wage change, for a worker of skill *s* switching from state *j* in period *t-1* to sector *k* in period *t*, and Δ^s_{jj} is the predicted wage change for workers of skill *s* remaining in state *j*.

An obvious advantage of estimates obtained from model (2) relative to those obtained from model (1) is that model (2) controls for possible unobservable ability that affects the wage level. However, it does not control for differences in the *growth* of wages of stayers and switchers (dynamic selection). Another downside of this latter method is that wage changes associated with transitions are identified only with the sample of switchers, which in some of the surveys is very small. The two models can also yield different results because while the static model provides a measure of the long-term differential, the dynamic model gives a measure of the short-term effects of switching. Finally, unlike the estimates obtained from model (1), the estimates obtained from model (2) do not impose symmetry in the effects of moving from state *j*

to *k* and vice-versa. Thus, for each pair of states *(j, k),* we get two estimates of the wage differential. Differences between the two estimates can flag selection problems.[7]

While earning differentials do not measure utility differentials, they are useful in that they give an indication of the differentials that other job attributes need to compensate for. Furthermore, under the assumption that the benefits provided by social security programs are higher than those provided by non-contributory programs to informal workers, a positive formal premium can be considered a lower bound of the wage plus benefit premium, since benefits are not included in the calculation. For formal salaried jobs, we consider the gross salary minus taxes and social security contributions; for informal salaried jobs and self-employment, we consider gross earnings minus taxes. If the former are larger than the latter, we can conclude that the difference would be even more positive, once the present value of benefits under different programs is added.[8] More caution should be exerted when comparing the earnings of formal salaried jobs with those of self-employment, as the reported earnings of the latter may include capital returns. Moreover, substantial differences in the nature of the jobs (for example, being one's own boss versus having a boss) make comparisons based solely on earnings less reliable than in the case of formal versus informal salaried workers.

3.2. Labor Mobility

We complement the analysis of wage differentials with an assessment of labor mobility across different labor market states. To do so, we first compute the transition matrix $\boldsymbol{P}$, where each element p_{jk} denotes the probability for a given individual of transiting to state k in period t, conditional on being in state j in period $t-1$. The length of the period is one year. Thus

$$p_{jk} = prob(S_t=k|S_{t-1}=j) \qquad (4)$$

For countries in which data is available for more than two years, the transition matrix is constructed pooling all individual transitions, regardless of the period in which they occur. The data does not allow distinguishing transitions that occur within a given labor market state,

[7] This would be the case for example if switching from j to k was a consequence of a better (or worse) than average wage growth, while in the reverse switch that was not necessarily the case.

[8] However, Levy (2007) argues that in Mexico, informal workers may value more the benefits offered by non-contributory programs since many live in areas poorly served by social security programs.

therefore p_{jj} reflects the probability that a worker remains in a given state either because his job or position remains the same, or because a transition occurs within the same state.

In principle, the role of education/skills on labor market dynamics may be disentangled from the effect of other individual and household characteristics through the estimation of a dynamic multinomial logit model. However, the estimation of such a model presents difficulties, as the lagged labor market state is correlated with unobservable individual characteristics. In the literature, this problem is solved using Heckman's (1981) procedure in which a static multinomial Logit model is estimated for selection in the first period.[9] Proper implementation of the procedure requires three observations per individual. Yet, in all the countries in our study but Albania, the data contains only two observations per individual. Moreover, estimates for Albania suggest that the results are quite sensitive to the choice of variables used to identify selection in the initial period. Given these problems and the fact that we aim for comparability across countries, we choose a simpler approach and use observed transition matrices by education level. In order to control at least partially for other individual characteristics, we focus on males aged 25-64 years old. Observed probabilities have the advantage of being model free, and therefore not subject to possible biases implied by an inconsistent estimation of the dynamic multinomial logit model.

It is useful to compute the steady state distribution, π, a row vector that satisfies the equation $\pi = \pi P$. The steady state is the distribution of individuals across states that would be obtained if the matrix **P** prevailed over time. The distance between the observed distribution of population, α, and π, is given by

$$d = \frac{\sum_i |\alpha_i - \pi_i|}{5} \qquad (6)$$

and measures how far the observed distribution of employment in transition and Latin American economies is from the steady state associated with **P**.

The main diagonal of the matrix **P** provides relevant information on the persistence of each labor market state. A high persistence may either indicate a low quit (voluntary exit) or a

[9] Gong et al. 2004, Dostie and Sahn 2006.

low layoff rate (involuntary exogenous exit). High persistence may also be the result of high levels of re-absorption into that state in case a worker leaves a job voluntarily or involuntarily. Define δ_i as the unobserved probability that a worker in state *i* leaves a labor market position (either voluntarily or involuntarily).

We are interested in a benchmark that allows assessing whether transitions across different states are large or small when compared to the transitions that would result from a counterfactual situation with no labor market segmentation, defined as: (1) all states are equally preferred and (2) conditional on exiting a given labor market position, all workers have exactly the same probability of ending up in a given state *k*, independently of the state they were in t-1. [10] Notice that under the hypothesis of no segmentation, the probability of ending up in state *k* is proportional to the number of slots created in that state. In turn, there are no voluntary quits –as all labor market states are equally preferred—and therefore, workers only leave their current positions if some exogenous shock occurs. For example, layoffs or a bankruptcies force workers to find other jobs, or family shocks force inactive people to enter the labor force. It follows then that in a world without segmentation, the probability of exiting the current position (δ_j) depends only on exogenous shocks.

Formally, we define the elements of the benchmark transition matrix ***Z*** as follows:

$$z_{jk} = \delta_j \frac{N_{\bullet k} - N_{k\bullet}(1-\delta_k)}{\sum_i (N_{i\bullet}\delta_i)} \forall j \neq k \quad (7)$$

$$\text{and } z_{jj} = \delta_j \frac{N_{\bullet j} - N_{j\bullet}(1-\delta_j)}{\sum_i (N_{i\bullet}\delta_i)} + (1-\delta_j) \quad \forall j \quad (8)$$

where $N_{\bullet k}$ is the number of individuals in state *k* in period t, $N_{k\bullet}$ is the number of individuals in state *k* in period t-1, and $N_{\bullet k} - N_{k\bullet}(1-\delta_k)$ is the number of openings in state *k*. In addition,

[10] Notice that here we refer to "position" instead of labor market "state." Workers may leave a job or position and end up in another position in the same state.

$N_{i\bullet}\delta_i$ is the number of people in state *i* that have been affected by a negative shock and are transiting to other states (seeking another position). Therefore, z_{jk} is the probability of being affected by a reallocation exogenous shock times the probability that a worker moves to state *k.* The latter in turn, is given by the number of vacancies opened in *k* divided by the total number of people seeking a job. The probability of remaining in the same state is given by two components: the probability of not being affected by any reallocation shock and the probability of being affected by a reallocation shock and finding another "position' within the same labor market state.

Under the null hypothesis of no segmentation, observed persistence p_{jj} is given by:

$$p_{jj} = z_{jj} \qquad \forall j = 1,...,5 \qquad (9)$$

which combined with expression (8), and given that we observe p_{kk}, $N_{\bullet k}$ and $N_{k\bullet}$ for all *k*, allows identifying the δ_k that are consistent with the hypothesis of no segmentation, and computing the rest of z_{jk} based on expression (7).[11] We can then evaluate whether the resulting z_{jk} differ from the observed p_{jk}. The distance between P and Z provides a summary measure of segmentation. This methodology to identify segmentation has the obvious advantage that it does not rely on measures of wage or other job attributes differentials, as a proxy of the changes in welfare associated with changing jobs. In addition, $t_{jk} = p_{jk}/z_{jk}<1$ (>1) indicates that the frequency of transition from state *j* to state *k* is smaller (higher) than in a situation with no segmentation as defined above, conditional on net exit rates from each state, as imposed in equation (9).[12] A

[11] In principle we could obtain the vector δ from any arbitrary set of p_{jk}, provided that either *j* or *k* include all labor market states (from 1 to 5). Under the null hypothesis of no-segmentation, we would recover the same δ, irrespectively of which p_{jk} we chose to equate to z_{jk}. However, we are interested in comparing p_{jk} and z_{jk} for j≠k, i.e. for transitions across different labor market states. For this reason, we set $p_{jj}=z_{jj}$. This is equivalent to comparing the observed transitions with an alternative counterfactual situation in which: a) all states are equally preferred; b) all persons leaving a labor market position have equal probabiliy of ending up in state k, independently from the state they come from; and c) net exit rates from each state are the same as in the observed economy.

[12] Maloney (1999) proposes an alternative counterfactual measure. He compares p_{jk} with the size of the destination state (s_k), defining $Q_{jk}=P_{jk}/s_k$. In a recent paper, Bosch and Maloney (2007b) use another normalization based on a measure proposed in an earlier version of this paper. There, we compared p_{jk} to the ratio of the net vacancies created by *k* to the net vacancies created by all other states but the state of departure *j*. An issue with this measure is that by excluding the departure state, *j*, it does not consider the appropriate number of seekers for a vacancy in state *k* and therefore, it does not compare the observed probability of moving from state *j* to *k*, with the same probability under no segmentation.

situation where $t_{jk} = p_{jk} / z_{jk} > 1$ indicates that (i) workers exiting from *j* have a strong preference for *k* over all other states, or that workers exiting from *j* are particularly suited (preferred by employers) to work in *k*. Alternatively, $t_{jk} = p_{jk} / z_{jk} < 1$ indicates that workers exiting from *j* either prefer to go to destinations other than *k*, or, they are discriminated against by employers in *k*.

We can now apply the set of tools described in this section, starting from the analysis of wage differentials.

4. Wage Differentials

4.1. Formal versus Informal Salaried Jobs

Table 5 looks at wage differentials between formal and informal wage jobs, separately for unskilled and skilled individuals. We report difference in unadjusted medians (Columns 1 and 5), as well as predictions from the static (columns 2 and 6) and dynamic econometric models (columns 3- 4 and 7- 8) [13]. The difference-in-difference (skilled minus unskilled) is reported in columns 9 to 12 (based on observed values, and on predictions from static and dynamic models). In columns 9 to 11, values above zero indicate a wage premium for formal jobs that is higher in the skilled labor market. In column 12, the same result is associated with a negative sign.

Median wages indicate a formality premium in all Latin American countries, for both skilled and unskilled workers, with higher premium in the skilled market in Argentina and Venezuela. Similar results are found when we employ the static econometric model, and control for selection into alternative labor market states through inverse Mills ratios from a multinomial logit regression. Evidence for ECA countries is much less clear. We find no sign of significant wage differentials in Albania, an informality premium significantly higher for unskilled workers in Georgia, and a formality premium not significantly different across skills in Ukraine.

The picture changes when we use a more appropriate dynamic econometric model. Interestingly, in Latin America and Ukraine, countries for which the static model yielded a positive formality premium, wage differentials generally shrink in size and significance. This

[13] For post estimation predictions, in both models (1) and (2) we set all variables to the mean among male individuals aged 25-64 belonging to the estimation sample of model (2). Unadjusted median earnings refer to male workers 25-64 years old. This is for consistency with the transition matrices, where we attempt to reduce the weight of individual characteristics by restricting the evidence to male individuals aged 25-64.

divergence between the two types of estimates suggests that formal workers are positively selected and that with the static model we did not properly account for such selection. Thus, while on average formal sector workers earn more, these earnings are likely to be associated with unobserved ability rather than with higher job "quality." Evidence from the dynamic model still suggests the presence of a formality wage premium in Latin America, with one exception for skilled workers who move to an informal job in Argentina (experiencing no loss). It is also reassuring that with the exception of the estimates for skilled workers in Argentina, for Latin American countries estimates presented in columns (3) and (7) are very similar in size to the absolute value of those in columns (4) and (8). The former suggests that individuals who switch from formal to informal are not very different from workers who switch from informal to formal jobs.

Interestingly, in Albania and Georgia the difference between static and dynamic estimates, particularly for unskilled workers, suggests some positive selection into informality. Once this selection is accounted for, most wage differentials are not statistically significant. We no longer find evidence of a formality wage premium in Ukraine. Lastly, based on the dynamic model, there is no evidence that the wage premium differs significantly across skills. One exception is Georgia, where skilled workers who transit to an informal job experience a wage gain, and this informality wage premium is significantly higher than for unskilled workers.

Overall, an appropriate econometric analysis suggests the presence of formality wage premia in the three Latin American countries, without significant difference across skills, and no significant wage premium in Eastern European and Central Asian countries. In Latin America, the unexplained wage premia range between 6 and 12% for unskilled workers, and from 9 to 20% for the skilled. Comparing these values to the returns to education and experience we find that, for example, in Argentina the potential gains for informal workers of eliminating segmentation—assuming that wages of informal workers would reach values close to the current wages for formal workers—could be roughly equivalent to the gains to be obtained from one and a half additional years of primary education, one year of college, or five years of experience.[14] Instead, for Mexico, where the differentials are much lower, the gains would be less than those obtained through an additional year of primary, or 2.5 years of experience.

[14] Based on returns to education and experience data for Argentina and Mexico from Duryea and Pagés (2003).

4.2. Formal Salaried Jobs versus Non-agricultural Self-employment

Table 6 compares earnings of formal employees and non-agricultural self-employed. Differences in median wages across the two types of jobs go in all directions. Instead, the static econometric model provides consistent evidence of formality wage premium for unskilled workers in the three Latin American countries while no significant premium is found in Albania and Ukraine. In Georgia, no reliable information on earnings from self-employment is available. Among skilled workers, on the contrary, hourly earnings are higher for formal wage employees only in Mexico. The formality premium is significantly higher for unskilled workers in Argentina and Venezuela, while in Mexico the premium is significantly higher for skilled workers.

The picture changes considerably and is less clear when the dynamic econometric model is employed. For unskilled workers, the findings of the static model are confirmed only for Venezuela. After controlling for workers' unobserved characteristics, we find only partial evidence of a significant formality premium in Argentina or Mexico for skilled workers. Yet, the estimates in column (7) differ substantially from those in column (8) (in absolute value). This suggests that workers who switch from salaried to self-employment differ from those who switch from self-employment to salaried, pointing to issues of dynamic selection. Overall, where one is found, the formality premium is significantly different across skills only in Mexico, where it is higher among highly educated workers.

To summarize, in Latin America, we find that formal jobs pay higher wages than informal jobs, for both skilled and unskilled workers. The evidence is also consistent with positive selection into formal jobs. In contrast, we find no evidence of a wage premium for formal jobs over informal wage-employment in ECA, and no evidence of positive selection into formality. Evidence of a premium over self-employment, and of differences across skills, is more scattered. Only in Venezuela, there seems to be conclusive evidence that formal employees earn more than self-employed workers. With this picture in mind, we move now to the analysis of transitions across labor market states.

5. Mobility

We compute transition matrices for all countries distinguishing between two skill levels, which yields 12 matrices. The full set of transition matrices for skilled and unskilled workers are

presented in tables A.1 in the Appendix. We first assess how far the composition of the labor market is from the steady state, determined by the replication of the matrix **P** over time (See table 7). Not surprisingly, the distance from the steady state is lowest in Mexico and Venezuela, and highest in Georgia and Ukraine, two countries in the midst of the transition from socialism to market economies during the sample period. The distance is intermediate for Albania and Argentina—the first a country also in transition, the second undergoing a steady increase in its unemployment rate during the 1990s. It is also relevant that the average difference from the steady state is much higher for unskilled labor, particularly in Argentina, Georgia and Ukraine, an important indication that the unskilled market was the one subject to deeper transformations. Results do not change if the distance from the steady state associated with **P** is computed only for workers employed across two consecutive periods and transiting across three potential labor market states (salaried formal, salaried informal, self-employed).

We assess segmentation by comparing how far the matrix **P** is from the matrix **Z** (as defined in equations 7 and 8), by computing the mean of the absolute values of the difference between the two matrices, element by element. The results presented in Table 8 indicate that, regardless whether the five-state or the three-state matrices are compared, the distance between the two steady states is highest in Georgia and Ukraine, suggesting higher segmentation (state-dependence) both across different jobs, unemployment and out of the labor force (five-states) and also when only considering transitions across different types of jobs (three-states). In contrast, Latin American countries are characterized by the lowest levels of segmentation, particularly according to the measure based on five states.

Another relevant finding is that the degree of segmentation is higher for skilled workers when the five-state transition matrices are considered, and higher for the unskilled when considering only three states. The former suggests that segmentation across different types of jobs is higher for unskilled workers, while skilled workers experience a higher degree of state-dependence and segmentation in transitions across employment, unemployment and out of the labor force.

We proceed by focusing on key job-to-job transitions, namely those between formal wage employment and informal jobs, and between formal salaried employment and non-agricultural self-employment.

5.1.Transitions between Formal and Informal Salaried Jobs

We focus first on the difference between the exit rates from formal and informal salaried jobs. Table 9 presents the difference in persistence, i.e. one minus the exit rate. For both skilled and unskilled workers, without exceptions, the probability of remaining in a salaried formal job is higher than the persistence in an informal salaried job (columns 5 and 6). Skilled workers show higher persistence at formal salaried jobs than unskilled workers, but also lower persistence when in informal salaried jobs. This suggests that they are better matched to (as in Albrecht and Navarro (2006)), or have a higher preference for, formal salaried relative to informal salaried jobs.[15]

Transition probabilities across formal and informal salaried jobs are large for both skilled and unskilled workers. On average, ten percent of unskilled and five percent of skilled workers in formal salaried jobs are found in an informal salaried job in the following year.[16] Reverse transitions are even larger: one in every five unskilled workers and one in every three skilled workers in an informal salaried job moves to a formal salaried job in the following period. Even in Albania, the country with the lowest transition probability from informal to formal salaried for unskilled workers, 12 percent of the informal salaried transit to formal sector jobs every year. As reported by IDB (2004), rather than stagnant pools, the labor market seems to be characterized by a large degree of mobility across formal and informal salaried jobs.

But how high is this mobility relative to a situation in which all workers who leave a given labor market state *j* have the same probability of ending up in a given state *k* independently of their past labor market state, and where the probability of ending up in a given state is directly proportional to the openings in such state? To assess the degree of mobility relative to this benchmark we compare the elements of the matrices **P** with **Z**, defining $t_{jk}=p_{jk}/z_{jk}$. The results are presented in Table 10 and in Table A1 in the Appendix. In most cases, and for skilled and unskilled workers, the *t* index for the transition from formal to informal jobs is very close to one,

[15] It is also possible that formal skilled workers, when in formal jobs, are particularly concentrated in sectors that are inherently more stable. We examine the share of workers employed in manufacturing, services, public sector and construction, by labor market state and skill level. We find that in Albania, for example, the main employment sector for skilled formal workers is public administration, as opposed to services for unskilled formal workers. Among informal employees, the main sector of employment is construction for the unskilled, and services for the skilled. Assuming that a public job is more stable than one in a service activity, and that the construction sector is less stable than the service sector, this suggests that formal jobs are intrinsically more stable than informal ones.

[16] Unweighted country averages.

indicating that movements are approximately what would be expected in the no segmentation benchmark. One exception is Georgia, where workers in formal salaried jobs, particularly the skilled, are more likely to enter an informal job than workers that come from other sectors. Instead, transitions out of informal salaried jobs and into formal jobs are higher than in the no segmentation benchmark case, indicating that there is a strong tendency for informal sector workers to be absorbed in formal sector jobs, above the benchmark of no segmentation. Moreover, this is true for both skilled and unskilled workers. Workers in informal salaried jobs either have lower retention rates in their own state than would be expected in the no-segmentation case—due to low preferences for informal salaried jobs—or have a higher probability of being hired in formal sector jobs than workers who were formerly in other labor market states. The ratio between the observed and the no-segmentation probability of transition from informal to formal jobs is lowest in Mexico, confirming the low segmentation between formal and informal jobs found in other studies (Maloney 1999, Bosch and Maloney 2007a) but also indicating that conclusions based on Mexico cannot be easily generalized.

In terms of differences across skill levels, t_{43} indices tend to be higher than t_{34} indices both for skilled and unskilled workers, suggesting a preference for formal over informal salaried jobs for all workers in all countries. There is no clear pattern in the differences between t_{43} and t_{34} across skills—a measure of how much more preferred are formal sector jobs. This is another indication that, in general, it is difficult to find clear patterns in differences in segmentation across skill levels.

5.2. Formal Salaried Jobs versus Non-agricultural Self-employment

Self-employment activities exhibit a lower degree of persistence than formal salaried jobs for both skilled and unskilled workers (see Table 11, columns 5 and 6) and this difference tends to be more prominent in the market for skilled labor (column 9) suggesting that skilled workers give up more in terms of stability when they move to self-employment than unskilled workers.

We do not see as much mobility out of self-employment and into formal jobs as in the case of transitions from informal salaried to formal jobs. Mobility between formal salaried jobs and self-employment is about half the mobility from formal to informal jobs (Table 12, Columns 1-4). Mobility also looks low relative to the benchmark case of no segmentation, particularly for the unskilled, where in most cases the value of t_{35} and t_{53} (3=formal salaried, 5=self-

employment) are well below one (Table 12-Columns 5-8). Such low mobility suggests that either there are important barriers to switching from self-employment to formal jobs, or there is an important degree of assortative matching based on individual preferences and comparative advantages. Once workers choose a certain type of employment category, they do not change sector often, even when forced to look for another job.

The two last columns of table 12 assess the degree of preference for formal sector jobs, based on the relative difference between t_{35} and t_{53}. The findings suggest that in general, there is more mobility into self-employment than out of it and into formal salaried jobs, providing some evidence for the hypothesis that workers move into self-employment based on comparative advantage and individual preferences.

6. Conclusions

We analyze labor market segmentation in six transition and Latin American countries, separately for skilled and unskilled workers. In contrast to most of the previous literature, we look simultaneously at patterns of mobility and the associated variations in earnings, assessing mobility against a benchmark of no segmentation.

We find widespread evidence of segmentation across formal and informal wage employment. Measures of wage differentials suggest higher segmentation across types of jobs in Latin American countries than in Eastern Europe and Central Asia. On the other hand, measures based on mobility indicate the opposite. This suggests that while in Eastern Europe and Central Asia formal sector jobs pay equal or even less than informal salaried jobs or self-employment, formal jobs are still preferred based on the benefits and amenities they provide. Workers may also prefer formal over informal salaried jobs because of their relative higher stability – particularly for skilled workers.

We also find important differences in the conclusions based on wage differentials and mobility measures when we compare formal salaried workers and self-employment. With the exception of Venezuela, there is little evidence of a formality wage premium over self-employment, a finding that could, according to traditional measures of segmentation based only on wage differentials, be interpreted as evidence of lack of segmentation. At the same time, mobility measures indicate very little mobility across these two types of jobs. While the latter

could be interpreted as evidence of barriers to movement and segmentation, it is also compatible with the hypothesis of assortative matching based on individual preferences and comparative advantages. The finding that, in most countries and across skills, there is more mobility from formal salaried to self-employment than the reverse, provides some evidence that workers move to self-employment based on preferences.[17]

Lastly and quite importantly, we do not find important variations in wage differences or mobility patterns across skill levels. This implies that segmentation across formal and informal sector jobs is not (at least not solely) driven by minimum wages, or other labor market policies that only affect the unskilled market. Instead, labor market segmentation may be driven by efficiency wage payments, differences in firm size (larger firms traditionally pay higher wages and/or offer better job conditions), or the need to maintain a primary and a secondary market to flexibilize the labor market and which cut across skill categories. This implies that education does not warrant the preferred jobs.

[17] Perry et al (2007) analyze subjective data on preferences for self-employment over salaried jobs in Latin American countries and reach a similar conclusion.

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Tables

Table 1 – Data Sources

Country	Period	
Albania	2002-2004	Living Standard Measurement Study (LSMS) and the Albanian Panel Surveys (APS)
Argentina	1995-2001	Permanent Household Survey (EPH-*Encuesta Permanente de Hogares*)
Georgia	1998-1999	Labor Force Survey (LFS) and the Survey of Georgian Households (SGH)
Mexico	1990-2001	Urban Employment National Survey (ENE.- *Encuesta Nacional de Empleo Urbano*)
Ukraine	2003-2004	Ukrainian Longitudinal Monitoring Survey (ULMS)
Venezuela	1999-2002	Household Survey (EHM-*Encuesta de Hogares por Muestreo*)

Table 2 – Macroeconomic Context During the Sample Period

	GDP per capita (constant 2000 US$)	GDP growth (av. annual % change)	GDP growth (av. annual % change) in prev. three years	Inflation, consumer prices (annual %)	Unemployment, total (% of total labor force)	Trade (% of GDP)	Share of Industry in GDP
Albania (2002-2004)	1356.6 (a)	5.3 (a)	8.3	4.1	15.8 (b)	61.6 (a)	19.1 (a)
Argentina (1995-2001)	7872.7	0.9	7.9	0.3	15.7	21.9	28.5
Georgia (1998-1999)	556.2	3	8.1	11.4	14.2	55.4	22.7
Mexico (1990-2001)	5331.9	3.3	2.3	18.3	3.3 (d)	50.9	28
Ukraine (2003-2004)	812.5 (a)	9.4 (a)	6.8	5.2 (a)	n/a	101.2 (a)	40.3 (a)
Venezuela (1995-2002) (c)	5097.2	0.2	1.3	40	12.8	45.8	40

Source: World Bank, WDI database.
Note: Figures are averages of the periods in brackets for each country
(a) excluding 2004
(b) only 2002
(c) In Venezuela, while data is available for the period 95-02, our estimates only cover the period 99-02 due to comparability problems of variables across time.

Table 3 – Share of Individuals with High Education, By Labor Market State

Normalized share of individuals with high education in status i (divided by the overall share of individual with high education)	1 Out of labor force	2 Unemployed	3 Wage formal	4 Wage informal	5 Non-agricultural self employed	Total (relative)	Share in Working Age Population (absolute)
Albania	0.65	1.00	1.80	0.93	1.14	1.00	0.42
Argentina	0.71	0.90	1.48	0.84	0.98	1.00	0.39
Georgia	0.68	1.05	1.46	0.56	0.58	1.00	0.37
Mexico	0.82	1.21	1.35	0.98	0.74	1.00	0.33
Ukraine	0.81	1.03	1.13	0.93	1.09	1.00	0.75
Venezuela	0.81	1.10	1.55	0.79	0.78	1.00	0.34

Table 4 – Percentage of Individuals in Professional Activities, By Labor Market State

Share of individuals in professional activities (divided by the overall share of individual in professional activities)	3 Wage formal	4 Wage informal	5 Non-agricultural self employed	Total (relative)	Share in Working Age Population (absolute)
Albania	1.77	0.20	0.57	1.00	0.27
Argentina	1.48	0.53	0.47	1.00	0.34
Georgia	1.23	0.29	0.25	1.00	0.55
Mexico	1.38	0.89	0.34	1.00	0.32
Ukraine	1.06	0.15	1.43	1.00	0.33
Venezuela	1.86	0.59	0.25	1.00	0.25

Table 5 – Wage Differentials: Formal versus Informal Wage Jobs

	Differential between observed medians	*Predicted premium - from static wage regression*	*Predicted premium (from panel estimates) - Changes between t-1 and t, associated with the transition from formal to informal or vice-versa*		*Differential between observed medians*	*Predicted premium - from static wage regression*	*Predicted premium (from panel estimates) - Changes between t-1 and t, associated with the transition from formal to informal or vice-versa*					
	UNSKILLED WORKERS				SKILLED WORKERS				DIFFERENCE-IN-DIFFERENCE			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
	(W3/W4)-1	(W3/W4)-1	Δw43-Δw44	Δw34-Δw33	(W3/W4)-1	(W3/W4)-1	Δw43-Δw44	Δw34-Δw33	[5]-[1]	[6]-[2]	[7]-[3]	[8]-[4]
Albania	-0.02	-0.08	0.06	-0.29	0.10	0.15	-0.15	-0.05	0.12	0.23	*-0.21*	0.24
	0.04	*0.14*	*0.14*	*0.13*	*0.05*	*0.12*	*0.15*	*0.18*	*0.06*	*0.03*	*0.19*	*0.21*
Argentina	0.26	0.23	0.16	-0.18	0.39	0.33	0.20	*0.06*	0.14	0.10	0.04	0.24
	0.04	0.05	0.07	0.07	0.07	0.07	0.08	*0.10*	0.08	0.01	*0.10*	0.11
Georgia	-0.43	-0.64	-0.06	0.11	-0.07	0.03	-0.17	0.49	0.36	0.66	-0.11	0.38
	0.05	*0.16*	*0.18*	*0.16*	*0.35*	*0.25*	*0.25*	*0.25*	*0.36*	*0.04*	*0.25*	*0.22*
Mexico	0.23	0.28	0.06	-0.07	0.23	0.10	0.09	-0.06	0.00	-0.17	0.03	0.01
	0.01	*0.01*	*0.01*	*0.01*	*0.03*	*0.01*	*0.01*	*0.01*	*0.04*	*0.00*	*0.02*	*0.01*
Ukraine	0.21	0.26	*NR*	*-0.36*	0.32	0.28	-0.08	0.03	0.11	0.03	*NR*	*0.39*
	0.31	*0.16*	--	*0.25*	*0.14*	*0.09*	*0.25*	*0.27*	*0.35*	*0.03*	--	*0.34*
Venezuela	0.19	0.30	0.08	-0.10	0.58	0.37	0.13	-0.09	0.38	0.07	0.06	0.01
	0.02	0.04	0.04	0.04	0.08	0.06	0.07	0.08	0.08	0.01	*0.07*	0.08

Note: 3=formal salaried, 4= informal salaried. Standard errors in *Italic*; NR indicates estimates for which less than 30 observations were available for a given transition and skill level.

Table 6 – Earning Differentials: Formal Jobs versus Self-Employment

	Differential between observed medians	*Predicted premium - from static wage regression*	*Predicted premium (from panel estimates) - Changes between t-1 and t, associated with the transition from formal to self-empl. or vice-versa*		*Differential between observed medians*	*Predicted premium - from static wage regression*	*Predicted premium (from panel estimates) - Changes between t-1 and t, associated with the transition from formal to self-empl. or vice-versa*					
	UNSKILL [1]	UNSKILL [2]	UNSKILL [3]	UNSKILL [4]	SKILL [5]	SKILL [6]	SKILL [7]	SKILL [8]	DIFF-DIFF [9]	DIFF-DIFF [10]	DIFF-DIFF [11]	DIFF-DIFF [12]
	(W3/W5)-1	(W3/W5)-1	Δw53-Δw55	Δw35-Δw33	(W3/W5)-1	(W3/W5)-1	Δw53-Δw55	Δw35-Δw33	[5]-[1]	[6]-[2]	[7]-[3]	[8]-[4]
Albania	-0.18	-0.30	NR	0.10	-0.06	-0.03	NR	0.17	0.12	0.26	NR	0.07
	0.03	*0.15*	--	*0.12*	*0.06*	*0.13*	--	*0.19*	*0.07*	*0.03*	--	*0.21*
Argentina	0.03	0.18	-0.18	-0.02	0.10	-0.06	0.03	0.26	0.07	-0.24	0.21	0.28
	0.03	*0.05*	*0.16*	*0.12*	*0.05*	*0.07*	*0.13*	*0.15*	*0.06*	*0.01*	*0.19*	*0.18*
Georgia	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	--	--	--	--	--	--	--	--	--	--	--	--
Mexico	0.04	0.06	-0.10	0.07	0.42	0.12	0.10	-0.06	0.37	0.06	0.20	-0.13
	0.01	*0.01*	*0.02*	*0.02*	*0.05*	*0.02*	*0.04*	*0.04*	*0.05*	*0.00*	*0.04*	*0.04*
Ukraine	-0.27	0.17	*NR*	NR	0.03	-0.24	*NR*	*NR*	0.29	-0.42	NR	NR
	0.50	*0.33*	--	--	*0.20*	*0.13*	--	--	*0.53*	*0.07*	--	--
Venezuela	-0.09	0.17	0.17	-0.18	0.19	0.04	0.10	-0.20	0.28	-0.13	-0.07	-0.02
	0.01	*0.03*	*0.07*	*0.08*	*0.03*	*0.05*	*0.09*	*0.10*	*0.03*	*0.01*	*0.11*	*0.12*

Notes: 3=formal salaried, 5= self-employed. Standard errors in *Italic*; NR indicates estimates for which less than 30 observations were available for a given transition and skill level. NA indicates that information on earnings from self-employment is missing.

Table 7 – Distance from the Steady State

	Five-states			Three-states	
Mean of abs value of distance	*Unskilled*	*Skilled*		*Unskilled*	*Skilled*
Albania	0.028	0.024		0.038	0.045
Argentina	0.029	0.010		0.022	0.005
Georgia	0.053	0.039		0.057	0.007
Mexico	0.006	0.007		0.007	0.007
Ukraine	0.062	0.023		0.119	0.052
Venezuela	0.009	0.004		0.022	0.007
Mean	0.032	0.017		0.048	0.020

Table 8 – Distance of the Observed Transition Matrix from the Benchmark of No Segmentation

	Five-states			Three-states	
Mean of abs value of distance	*Unskilled*	*Skilled*		*Unskilled*	*Skilled*
Albania	0.019	0.023		0.003	0.002
Argentina	0.016	0.018		0.004	0.003
Georgia	0.032	0.040		0.047	0.019
Mexico	0.015	0.020		0.006	0.001
Ukraine	0.040	0.030		0.040	0.014
Venezuela	0.018	0.022		0.009	0.010
Mean	0.024	0.025		0.012	0.008

Table 9 – Persistence in Formal and Informal Jobs, By Skill Level

	UNSKILLED		*SKILLED*		*UNSKILLED*	*SKILLED*	*FORMAL*	*INFORMAL*	*DIFF-DIFF*
	P33	P44	P33	P44	[1] - [2]	[3] - [4]	[3] - [1]	[4] - [2]	[6] - [5] = [7] - [8]
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Albania	0.68	0.53	0.87	0.55	0.15	0.32	0.20	0.02	0.18
					0.05	*0.04*	*0.04*	*0.05*	*0.06*
Argentina	0.82	0.47	0.86	0.41	0.35	0.45	0.04	-0.07	0.10
					0.02	*0.03*	*0.01*	*0.04*	*0.04*
Georgia	0.87	0.54	0.94	0.37	0.33	0.57	0.07	-0.17	0.24
					0.04	*0.07*	*0.02*	*0.08*	*0.08*
Mexico	0.78	0.55	0.80	0.45	0.23	0.36	0.02	-0.10	0.13
					0.01	*0.01*	*0.01*	*0.01*	*0.02*
Ukraine	0.74	0.64	0.89	0.42	0.10	0.48	0.16	-0.22	0.38
					0.16	*0.07*	*0.03*	*0.17*	*0.17*
Venezuela	0.74	0.39	0.81	0.23	0.36	0.58	0.07	-0.16	0.22
					0.01	*0.02*	*0.01*	*0.02*	*0.03*
Average	0.77	0.52	0.86	0.42	0.25	0.44	0.09	-0.10	

Notes: 3=formal salaried, 4= informal salaried. Standard errors in *Italics*

Table 10 – Transitions between Formal and Informal Jobs, By Skill Level

	P34U	P34S	P43U	P43S	T43U	T34U	T43S	T34S	T43U-T34U	T43S-T34S
Albania	0.17	0.05	0.12	0.17	1.28	1.1	1.34	0.93	0.18	0.41
Argentina	0.07	0.06	0.14	0.27	1.47	1.15	1.24	1.02	0.32	0.22
Georgia	0.07	0.02	0.27	0.46	1.94	1.36	2.40	1.73	0.58	0.67
Mexico	0.13	0.12	0.23	0.39	1.16	1.03	1.09	1.06	0.13	0.03
Ukraine	0.06	0.02	0.15	0.42	1.59	0.88	1.78	1	0.71	0.78
Venezuela	0.09	0.05	0.26	0.42	1.37	1.09	1.3	1.01	0.28	0.29
Average	0.10	0.05	0.20	0.33	1.47	1.08	1.5	1.15	0.39	0.36

Notes: U=unskilled, S=skilled, 3=formal salaried, 4= informal salaried.

Table 11 – Persistence in Formal Salaried and Self-Employment, By Skill Level

	UNSKILLED		*SKILLED*		*UNSKILLED*	*SKILLED*	*FORMAL*	*SELF*	*DIFF-DIFF*
	P33	P55	P33	P55	[1] - [2]	[3] - [4]	[3] - [1]	[4] - [2]	[6] - [5] = [7] - [8]
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Albania	0.68	0.72	0.87	0.77	-0.04	0.11	0.20	0.05	0.15
					0.05	*0.03*	*0.04*	*0.04*	*0.06*
Argentina	0.82	0.59	0.86	0.68	0.23	0.18	0.04	0.09	-0.05
					0.02	*0.03*	*0.01*	*0.03*	*0.04*
Georgia	0.87	0.72	0.94	0.70	0.15	0.24	0.07	-0.02	0.09
					0.04	*0.07*	*0.02*	*0.08*	*0.08*
Mexico	0.78	0.66	0.80	0.62	0.11	0.18	0.02	-0.04	0.07
					0.01	*0.01*	*0.01*	*0.02*	*0.02*
Ukraine	0.74	0.31	0.89	0.84	0.43	0.06	0.16	0.52	-0.37
					0.18	*0.05*	*0.03*	*0.19*	*0.19*
Venezuela	0.74	0.70	0.81	0.68	0.04	0.12	0.07	-0.01	0.08
					0.01	*0.02*	*0.01*	*0.02*	*0.02*

Notes: 3=formal salaried, 5= self-employed. Standard errors in *Italic*

Table 12 – Transitions between Formal Salaried and Self-Employment, By Skill Level

	P35U	P35S	P53U	P53S	T53U	T35U	T53S	T35S	T53U-T35U	T53S-T35S
Albania	0.07	0.04	0.05	0.06	0.99	0.7	0.93	1.03	0.29	-0.1
Argentina	0.03	0.03	0.04	0.09	0.64	0.67	0.82	0.78	-0.03	0.04
Georgia	0.01	0.01	0.10	0.04	1.38	0.59	0.44	1.17	0.79	-0.73
Mexico	0.05	0.04	0.07	0.15	0.69	0.86	0.83	0.85	-0.17	-0.02
Ukraine	0.01	0.01	0	0.02	0	0.95	0.35	0.97	-0.95	-0.62
Venezuela	0.07	0.06	0.06	0.12	0.61	0.87	0.87	0.96	-0.26	-0.09
Average	0.04	0.03	0.06	0.08	0.73	0.75	0.73	0.97	-0.02	-0.24

Note: U=unskilled, S=skilled, 3=formal salaried, 5=self-employment.

Appendix

Table A.1 – Transition Matrices

ALBANIA LOW EDUCATION **MALES AGE 25-64**

Pjk	1	2	3	4	5
1 Out of labor force	0.71	0.03	0.03	0.15	0.08
2 Unemployed	0.23	0.25	0.05	0.27	0.19
3 Wage formal	0.06	0.03	0.68	0.17	0.07
4 Wage informal	0.06	0.05	0.12	0.53	0.24
5 Non-agricultural self employed / unpaid	0.06	0.02	0.05	0.16	0.72
OBSERVED P(.,j)	**0.22**	**0.06**	**0.17**	**0.28**	**0.27**

Pjk/ Zjk	1	2	3	4	5
1		1.30	0.67	1.10	0.91
2	2.09		0.52	0.83	0.91
3	1.07	1.36		1.10	0.70
4	0.54	0.93	1.28		1.13
5	1.10	0.67	0.99	1.02	

ALBANIA HIGH EDUCATION **MALES AGE 25-64**

Pjk	1	2	3	4	5
1 Out of labor force	0.67	0.08	0.05	0.14	0.06
2 Unemployed	0.23	0.29	0.12	0.21	0.15
3 Wage formal	0.02	0.01	0.87	0.05	0.04
4 Wage informal	0.03	0.02	0.17	0.55	0.22
5 Non-agricultural self employed / unpaid	0.06	0.01	0.06	0.10	0.77
OBSERVED P(.,j)	**0.14**	**0.05**	**0.43**	**0.17**	**0.22**

Pjk/ Zjk	1	2	3	4	5
1		2.46	0.63	1.18	0.60
2	1.93		0.80	0.88	0.76
3	1.02	1.15		0.93	1.03
4	0.34	0.41	1.34		1.32
5	1.25	0.54	0.93	1.04	

ARGENTINA LOW EDUCATION **MALES AGE 25-64**

Pjk	1	2	3	4	5
1 Out of labor force	0.67	0.11	0.04	0.07	0.12
2 Unemployed	0.14	0.32	0.10	0.23	0.22
3 Wage formal	0.02	0.06	0.82	0.07	0.03
4 Wage informal	0.04	0.17	0.14	0.47	0.18
5 Non-agricultural self employed / unpaid	0.06	0.13	0.04	0.18	0.59
OBSERVED P(.,j)	**0.10**	**0.13**	**0.38**	**0.19**	**0.20**

Pjk/ Zjk	1	2	3	4	5
1		1.19	0.77	0.64	1.40
2	1.47		0.84	0.86	1.06
3	1.00	1.12		1.15	0.67
4	0.55	0.90	1.47		1.05
5	1.04	0.98	0.64	1.16	

ARGENTINA HIGH EDUCATION **MALES AGE 25-64**

Pjk	1	2	3	4	5
1 Out of labor force	0.58	0.13	0.07	0.11	0.11
2 Unemployed	0.10	0.28	0.23	0.20	0.19
3 Wage formal	0.01	0.04	0.86	0.06	0.03
4 Wage informal	0.05	0.09	0.27	0.41	0.18
5 Non-agricultural self employed / unpaid	0.03	0.07	0.09	0.14	0.68
OBSERVED P(.,j)	**0.06**	**0.07**	**0.56**	**0.13**	**0.19**

Pjk/ Zjk	1	2	3	4	5
1		1.58	0.59	0.82	1.29
2	1.53		0.99	0.80	1.11
3	0.97	1.21		1.02	0.78
4	0.79	0.62	1.24		1.11
5	0.94	1.00	0.82	1.18	

GEORGIA LOW EDUCATION **MALES AGE 25-64**

Pjk	1	2	3	4	5
1 Out of labor force	0.72	0.14	0.04	0.06	0.05
2 Unemployed	0.18	0.53	0.07	0.15	0.08
3 Wage formal	0.02	0.03	0.87	0.07	0.01
4 Wage informal	0.04	0.05	0.27	0.54	0.10
5 Non-agricultural self employed / unpaid	0.02	0.02	0.10	0.15	0.72
OBSERVED P(.,j)	**0.18**	**0.16**	**0.38**	**0.15**	**0.13**

Pjk/ Zjk	1	2	3	4	5
1		2.28	0.48	0.56	1.11
2	1.73		0.57	0.85	1.02
3	0.73	0.96		1.36	0.59
4	0.32	0.41	1.94		1.21
5	0.29	0.27	1.38	1.59	

GEORGIA HIGH EDUCATION **MALES AGE 25-64**

Pjk	1	2	3	4	5
1 Out of labor force	0.71	0.18	0.05	0.02	0.04
2 Unemployed	0.17	0.64	0.12	0.04	0.04
3 Wage formal	0.01	0.02	0.94	0.02	0.01
4 Wage informal	0.06	0.03	0.46	0.37	0.08
5 Non-agricultural self employed / unpaid	0.07	0.06	0.04	0.13	0.70
OBSERVED P(.,j)	**0.12**	**0.19**	**0.60**	**0.04**	**0.05**

Pjk/ Zjk	1	2	3	4	5
1		1.73	0.49	0.48	1.10
2	1.34		0.90	0.64	0.84
3	0.59	0.99		1.73	1.17
4	0.33	0.17	2.40		1.27
5	0.80	0.72	0.44	3.06	

MEXICO LOW EDUCATION **MALES AGE 25-64**

Pjk	1	2	3	4	5
1 Out of labor force	0.63	0.03	0.09	0.11	0.14
2 Unemployed	0.09	0.15	0.25	0.33	0.18
3 Wage formal	0.02	0.02	0.78	0.13	0.05
4 Wage informal	0.03	0.03	0.23	0.55	0.16
5 Non-agricultural self employed / unpaid	0.05	0.02	0.07	0.19	0.66
OBSERVED P(.,j)	**0.08**	**0.03**	**0.42**	**0.25**	**0.23**

Pjk/ Zjk	1	2	3	4	5
1		1.49	0.89	0.66	1.69
2	1.52		1.08	0.89	0.95
3	1.02	1.29		1.03	0.86
4	0.64	0.73	1.16		0.99
5	1.60	1.01	0.69	1.09	

MEXICO HIGH EDUCATION **MALES AGE 25-64**

Pjk	1	2	3	4	5
1 Out of labor force	0.50	0.05	0.19	0.16	0.10
2 Unemployed	0.10	0.20	0.33	0.19	0.18
3 Wage formal	0.01	0.02	0.80	0.12	0.04
4 Wage informal	0.03	0.03	0.39	0.45	0.11
5 Non-agricultural self employed / unpaid	0.05	0.03	0.15	0.15	0.62
OBSERVED P(.,j)	**0.06**	**0.03**	**0.57**	**0.20**	**0.14**

Pjk/ Zjk	1	2	3	4	5
1		1.84	0.88	0.87	1.41
2	2.36		0.92	0.65	1.62
3	0.77	1.19		1.06	0.85
4	0.71	0.57	1.09		0.99
5	2.06	1.20	0.83	1.02	

UKRAINE LOW EDUCATION **MALES AGE 25-64**

Pjk	1	2	3	4	5
1 Out of labor force	0.81	0.10	0.04	0.05	0.00
2 Unemployed	0.17	0.31	0.27	0.18	0.07
3 Wage formal	0.14	0.06	0.74	0.06	0.01
4 Wage informal	0.00	0.21	0.15	0.64	0.00
5 Non-agricultural self employed / unpaid	0.22	0.20	0.00	0.27	0.31
OBSERVED P(.,j)	**0.33**	**0.10**	**0.45**	**0.09**	**0.02**

Pjk/ Zjk	1	2	3	4	5
1		1.49	0.61	1.04	0.00
2	0.59		1.39	1.03	2.00
3	1.30	0.70		0.88	0.95
4	0.00	1.97	1.59		0.00
5	0.97	1.19	0.00	1.95	

UKRAINE HIGH EDUCATION **MALES AGE 25-64**

Pjk	1	2	3	4	5
1 Out of labor force	0.71	0.14	0.11	0.02	0.02
2 Unemployed	0.17	0.37	0.28	0.15	0.04
3 Wage formal	0.03	0.04	0.89	0.02	0.01
4 Wage informal	0.06	0.02	0.42	0.42	0.08
5 Non-agricultural self employed / unpaid	0.00	0.08	0.02	0.07	0.84
OBSERVED P(.,j)	**0.16**	**0.10**	**0.64**	**0.05**	**0.05**

Pjk/ Zjk	1	2	3	4	5
1		1.46	0.91	0.38	1.03
2	1.04		0.92	1.20	0.83
3	1.14	0.90		1.00	0.97
4	0.49	0.12	1.78		1.90
5	0.00	1.70	0.35	2.60	

VENEZUELA LOW EDUCATION **MALES AGE 25-64**

Pjk	1	2	3	4	5
1 Out of labor force	0.58	0.10	0.06	0.09	0.17
2 Unemployed	0.09	0.31	0.17	0.20	0.23
3 Wage formal	0.03	0.06	0.74	0.09	0.07
4 Wage informal	0.05	0.11	0.26	0.39	0.19
5 Non-agricultural self employed / unpaid	0.07	0.07	0.06	0.11	0.70
OBSERVED P(.,j)	**0.10**	**0.10**	**0.32**	**0.17**	**0.31**

Pjk/ Zjk	1	2	3	4	5
1		1.35	0.55	0.74	1.45
2	1.06		0.91	0.96	1.10
3	0.95	1.09		1.09	0.87
4	0.60	0.81	1.37		0.94
5	1.63	1.11	0.61	1.03	

VENEZUELA HIGH EDUCATION **MALES AGE 25-64**

Pjk	1	2	3	4	5
1 Out of labor force	0.48	0.12	0.13	0.11	0.16
2 Unemployed	0.17	0.30	0.25	0.10	0.19
3 Wage formal	0.02	0.05	0.81	0.05	0.06
4 Wage informal	0.06	0.10	0.42	0.23	0.19
5 Non-agricultural self employed / unpaid	0.04	0.06	0.12	0.09	0.68
OBSERVED P(.,j)	**0.08**	**0.09**	**0.51**	**0.09**	**0.23**

Pjk/ Zjk	1	2	3	4	5
1		1.38	0.65	1.01	1.27
2	2.05		0.87	0.67	1.02
3	0.85	1.13		1.01	0.96
4	0.60	0.70	1.30		0.94
5	1.06	1.00	0.87	1.20	